

Appl. No. 09/778,515

Response to Office Action mailed April 19, 2005

### CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

No amendments have been made to the claims.

#### **Listing of Claims:**

Claim 1 (Previously Presented): A method comprising:

generating gray elements and a single dithered gray background for display on a display device, the dithered gray background representing a fixed gray level of approximately 25 to 40%, and at least some of the gray elements representing different gray levels;

displaying all of the gray elements simultaneously;

displaying the dithered gray background simultaneously with the gray elements; and

estimating a gamma for the display device based on user selection of one of the simultaneously displayed gray elements that appears to most closely blend with the single dithered gray background.

Claim 2 (Original): The method of claim 1, wherein the dithered gray background represents a gray level of approximately 33%.

Claim 3 (Canceled).

Claim 4 (Original): The method of claim 1, further comprising characterizing the colorimetric response of the display device based on the estimated gamma.

Claim 5 (Original): The method of claim 1, the method further comprising:

modifying a color image based on the estimated gamma; and

delivering the modified color image to the display device.

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Claim 6 (Original): The method of claim 1, wherein the display device is associated with a client residing on a computer network, the method further comprising:

transmitting information representing the estimated gamma to a remote server on the network;

modifying the color image at the remote server based on the information; and

delivering the modified color image to the client via the computer network for display on the display device.

Claim 7 (Original): The method of claim 1, wherein estimating the gamma includes:

selecting one of a first plurality of gray elements displayed by the display device that appears to most closely blend with the dithered gray background;

estimating a coarse gamma for the display device based on the selected one of the first plurality of gray elements;

selecting one of a second plurality of gray elements displayed by the display device that appears to most closely blend with the dithered gray background, wherein the second plurality of gray elements includes the selected one of the first plurality of gray elements; and

estimating a fine gamma for the display device based on the selected one of the second plurality of gray elements, wherein the estimated fine gamma is the estimated gamma.

Claim 8 (Previously Presented): The method of claim 7, wherein the first plurality of gray elements represent greater gradations in gray intensity than the second plurality of gray elements.

Claim 9 (Previously Presented): The method of claim 1, further comprising:

simultaneously displaying a plurality of green elements within a web browser on a display device, at least some of the first green elements having different green levels;

displaying a dithered green background on the display device simultaneously with the first green elements, the dithered green background representing a fixed green level of approximately 25 to 40%;

receiving user selection of one of the first green elements with a green level that appears to most closely blend with the green level represented by the dithered green background;

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simultaneously displaying a plurality of second green elements within the web browser on the display device, at least some of the second green elements having different green levels, wherein the second green elements include the selected first green element, and the different green levels of the second green elements represent finer gradations in green intensity than the different green levels of the first green elements;

displaying the dithered green background on the display device simultaneously with the second green elements; and

receiving user selection of one of the second green elements with a green level that appears to most closely blend with the green level represented by the dithered green background,

wherein generating gray elements includes generating a first gray element with red, green and blue values substantially equal to the green value of the selected green element, and generating red-blue shifted gray elements with green values substantially equivalent to the green value of the selected second green element, wherein at least one of the red and blue values of each of the red-blue shifted gray elements is different from the green value of the selected green element, and thereby represent shifts in the red channel, blue channel, or a combination of the red and blue channels away from the first gray element, and

wherein estimating a gamma includes selecting one of the first gray element and the red-blue shifted elements that appears to most closely blend with the dithered gray background displayed by the display device, and estimating the gray balance of the display device based on the selected one of the first gray element and the red-blue shifted elements.

Claim 10 (Canceled).

Claim 11 (Original): The method of claim 9, wherein the red-blue shifted elements do not represent any substantial shift in green away from the color value of the selected green element.

Claim 12 (Original): The method of claim 1, further comprising:

estimating both the blackpoint and the gray balance of the display device; and

characterizing the colorimetric response of the display device based on the estimated gamma, blackpoint, and gray balance.

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Claim 13 (Original): The method of claim 12, wherein the display device is associated with a client residing on a computer network, the method further comprising:

transmitting information representing the estimated blackpoint, gamma, and gray balance to a remote server on the network;

modifying the color image at the remote server based on the information; and  
delivering the modified color image to the client via the computer network for display on the display device.

Claim 14 (Original): The method of claim 1, wherein the display device is associated with a client on a computer network, the method further comprising guiding the client through the process of obtaining the estimated gamma by delivering one or more instructional web pages to the client.

Claim 15 (Previously Presented): A system comprising:

a web server residing on a computer network, the web server transmitting web pages to remote clients residing on the computer network;

a color image server residing on the computer network, the color image server transmitting color images referenced by the web pages to the clients for display on display devices associated with the clients;

a color profile server residing on the computer network, the color profile server guiding the clients through a color profiling process to obtain information characterizing the color responses of the display devices associated with the clients, wherein the information includes a gamma for the display device, the gamma being determined by selecting one of a plurality of simultaneously displayed gray elements displayed by the display device that appears to most closely blend with a single dithered gray background displayed simultaneously with the gray elements that represents a fixed gray level of approximately 25 to 40%, wherein at least some of the gray elements represent different gray levels; and

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one or more color correction modules that modify the color images transmitted by the color image server based on the information to improve the accuracy of the color images when displayed on the respective display device.

Claim 16 (Original): The system of claim 15, wherein the color image server stores the information to the client in a web cookie, the client transmits the web cookie from the client to the server, and the color image server modifies the color image via the server based on the contents of the web cookie.

Claim 17 (Previously Presented): The system of claim 15, wherein the dithered gray background represents a gray level of approximately 33%.

Claim 18 (Canceled).

Claim 19 (Previously Presented): The system of claim 15, wherein the color profiling process includes:

simultaneously displaying a plurality of first green elements within a web browser on a display device, at least some of the first green elements having different green levels;

displaying a dithered green background on the display device simultaneously with the first green elements, the dithered green background representing a fixed green level of approximately 25 to 40%;

receiving user selection of one of the first green elements with a green level that appears to most closely blend with the green level represented by the dithered green background;

simultaneously displaying a plurality of second green elements within the web browser on the display device, at least some of the second green elements having different green levels, wherein the second green elements include the selected first green element, and the different green levels of the second green elements represent finer gradations in green intensity than the different green levels of the first green elements;

displaying the dithered green background on the display device simultaneously with the second green elements; and

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receiving user selection of one of the second green elements with a green level that appears to most closely blend with the green level represented by the dithered green background, wherein the gray elements include a first gray element with red, green and blue values substantially equal to the green value of the selected green element, and red-blue shifted gray elements with green values substantially equivalent to the green value of the selected second green element, wherein at least one of the red and blue values of each of the red-blue shifted gray elements is different from the green value of the selected green element, and thereby represent shifts in the red channel, blue channel, or a combination of the red and blue channels away from the first gray element, and

the gamma being determined by selecting one of the first gray element and the red-blue shifted elements that appears to most closely blend with the dithered gray background displayed by the display device, and estimating the gray balance of the display device based on the selected one of the first gray element and the red-blue shifted elements.

Claim 20 (Canceled).

Claim 21 (Original): The system of claim 19, wherein the red-blue shifted elements do not represent any substantial shift in green away from the color value of the selected green element.

Claim 22 (Previously Presented): The system of claim 15, wherein the gray elements include green elements representing a range of gray levels for a green channel, the dithered gray background is a dithered green background, and wherein estimating the gamma includes:

selecting one of a first plurality of green elements simultaneously displayed by the display device that appears to most closely blend with the dithered green background;

estimating a coarse gamma for the display device based on the selected one of the first plurality of green elements;

selecting one of a second plurality of green elements displayed by the display device that appears to most closely blend with the dithered green background, wherein the second plurality of green elements includes the selected one of the first plurality of green elements; and

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estimating a fine gamma for the display device based on the selected one of the second plurality of green elements, wherein the estimated fine gamma is the estimated gamma.

**Claim 23 (Previously Presented):** The system of claim 22, wherein the first plurality of green elements represent greater gradations in green intensity than the second plurality of green elements.

**Claim 24 (Original):** The system of claim 15, wherein the color profiling process includes:  
estimating both the blackpoint and the gray balance of the display device; and  
characterizing the colorimetric response of the display device based on the estimated gamma, blackpoint, and gray balance.

**Claim 25 (Previously Presented):** A computer-readable medium containing instructions that cause a programmable processor to:  
simultaneously display a plurality of gray elements on a display device together against a single dithered gray background representing a fixed gray level of approximately 25 to 40%, wherein at least some of the gray elements represent different gray levels;  
accept user selection of one of the simultaneously displayed gray elements that appears to most closely blend with the single dithered gray background; and  
estimate a gamma for the display device based on the selected gray element.

**Claim 26 (Original):** The computer-readable medium of claim 25, wherein the dithered gray background represents a gray level of approximately 33%.

**Claim 27 (Canceled).**

**Claim 28 (Original):** The computer-readable medium of claim 25, wherein the instructions cause the processor to characterize the colorimetric response of the display device based on the estimated gamma.

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Claim 29 (Original): The computer-readable medium of claim 25, wherein the instructions cause the processor to:

- modify a color image based on the estimated gamma; and
- deliver the modified color image to the display device.

Claim 30 (Original): The computer-readable medium of claim 25, wherein the display device is associated with a client residing on a computer network, and wherein the instructions cause the processor to:

- transmit information representing the estimated gamma to a remote server on the network;
- modify the color image at the remote server based on the information; and
- deliver the modified color image to the client via the computer network for display on the display device.

Claim 31 (Original): The computer-readable medium of claim 25, wherein the instructions cause the processor to estimate the gamma by:

- selecting one of a first plurality of gray elements displayed by the display device that appears to most closely blend with the dithered gray background;
- estimating a coarse gamma for the display device based on the selected one of the first plurality of gray elements;
- selecting one of a second plurality of gray elements displayed by the display devices that appears to most closely blend with the dithered gray background, wherein the second plurality of gray elements includes the selected one of the first plurality of gray elements; and
- estimating a fine gamma for the display device based on the selected one of the second plurality of gray elements, wherein the estimated fine gamma is the estimated gamma.

Claim 32 (Previously Presented): The computer-readable medium of claim 31, wherein the first plurality of gray elements represent greater gradations in gray intensity than the second plurality of gray elements.



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Claim 33 (Previously Presented): The computer-readable medium of claim 25, the instructions causing the processor to:

simultaneously display a plurality of first green elements within a web browser on a display device, at least some of the first green elements having different green levels;

display a dithered green background on the display device simultaneously with the first green elements, the dithered green background representing a fixed green level of approximately 25 to 40%;

receive user selection of one of the first green elements with a green level that appears to most closely blend with the green level represented by the dithered green background;

simultaneously display a plurality of second green elements within the web browser on the display device, at least some of the second green elements having different green levels, wherein the second green elements include the selected first green element, and the different green levels of the second green elements represent finer gradations in green intensity than the different green levels of the first green elements;

display the dithered green background on the display device simultaneously with the second green elements; and

receive user selection of one of the second green elements with a green level that appears to most closely blend with the green level represented by the dithered green background,

wherein generation of gray elements includes generation of a first gray element with red, green and blue values substantially equal to the green value of the selected green element, and generation of red-blue shifted gray elements with green values substantially equivalent to the green value of the selected second green element, wherein at least one of the red and blue values of each of the red-blue shifted gray elements is different from the green value of the selected green element, and thereby represent shifts in the red channel, blue channel, or a combination of the red and blue channels away from the first gray element, and

wherein estimation of a gamma includes selecting one of the first gray element and the red-blue shifted elements that appears to most closely blend with the dithered gray background display by the display device, and estimating the gray balance of the display device based on the selected one of the first gray element and the red-blue shifted elements.

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Claim 34 (Canceled).

Claim 35 (Original): The computer-readable medium of claim 33, wherein the red-blue shifted elements do not represent any substantial shift in green away from the color value of the selected green element.

Claim 36 (Previously Presented): The computer-readable medium of claim 25, wherein the instructions cause the processor to:

- estimate both a blackpoint and a gray balance of the display device; and
- characterize the colorimetric response of the display device based on the estimated gamma, blackpoint, and gray balance.

Claim 37 (Previously Presented): The computer-readable medium of claim 36, wherein the display device is associated with a client residing on a computer network, and the instructions cause the processor to:

- transmit information representing the estimated blackpoint, gamma, and gray balance to a remote server on the network;
- modify the color image at the remote server based on the information; and
- deliver the modified color image to the client via the computer network for display on the display device.

Claim 38 (Canceled).

Claim 39 (Original): The computer-readable medium of claim 25, wherein the instructions are contained both in physical data storage media and signals transmitted between the client and other resources on the computer network.

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Claim 40 (Previously Presented): The computer-readable medium of claim 25, wherein the display device is associated with a client on a computer network, and the instructions cause the processor to guide the client through the process of obtaining the estimated gamma by delivering one or more instructional web pages to the client.

Claim 41 (Previously Presented): A method comprising:

simultaneously displaying a plurality of green elements within a web browser on a display device, at least some of the green elements having different green levels;

displaying a dithered green background on the display device simultaneously with the green elements, the dithered green background representing a fixed green level of approximately 25 to 40%;

receiving user selection of one of the green elements with a green level that appears to most closely blend with the green level represented by the dithered green background;

generating a first gray element with substantially equivalent red, green and blue values, each of the red, green and blues being substantially equivalent to a green value of the selected green element;

generating red-blue shifted gray elements with green values substantially equivalent to the green value of the selected second green element, wherein at least one of the red and blue values of each of the red-blue shifted gray elements is different from the green value of the selected green element, and thereby represent shifts in the red channel, blue channel, or a combination of the red and blue channels away from the first gray element;

selecting one of the first gray element and the red-blue shifted elements that appears to most closely blend with a dithered gray background displayed by the display device; and

estimating gammas for the display device based on the red, green and blue values of the selected one of the gray element and the red-blue shifted elements.

Claim 42 (Previously Presented): The method of claim 41, wherein the dithered green background represents a fixed green level of approximately 33%.

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Claim 43 (Previously Presented): The method of claim 41, wherein the dithered gray background represents a fixed gray level of approximately 25 to 40%.

Claim 44 (Previously Presented): The method of claim 41, wherein the dithered gray background represents a fixed gray level of approximately 33%.

Claim 45 (Previously Presented): A method comprising:

- simultaneously displaying a plurality of first green elements within a web browser on a display device, at least some of the first green elements having different green levels;

- displaying a dithered green background on the display device simultaneously with the simultaneously displayed first green elements, the dithered green background representing a fixed green level of approximately 25 to 40%;

- receiving user selection of one of the first green elements with a green level that appears to most closely blend with the green level represented by the dithered green background;

- simultaneously displaying a plurality of second green elements within the web browser on the display device, at least some of the second green elements having different green levels, wherein the second green elements includes the selected first green element, and the different green levels of the second green elements represent finer gradations in green intensity than the different green levels of the first green elements;

- displaying the dithered green background on the display device simultaneously with the second green elements;

- receiving user selection of one of the second green elements with a green level that appears to most closely blend with the green level represented by the dithered green background;

- generating a first gray element with substantially equivalent red, green and blue values, each of the red, green and blues being substantially equivalent to a green value of the selected second green element;

- generating red-blue shifted gray elements with green values substantially equivalent to the green value of the selected second green element, wherein at least one of the red and blue values of each of the red-blue shifted gray elements is different from the green value of the

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selected green element, and thereby represent shifts in the red channel, blue channel, or a combination of the red and blue channels away from the first gray element;

selecting one of the first gray element and the red-blue shifted elements that appears to most closely blend with a dithered gray background displayed by the display device; and

estimating gammas for the display device based on the red, green and blue values of the selected one of the gray element and the red-blue shifted elements.

Claim 46 (Previously Presented): The method of claim 45, wherein the dithered green background represents a fixed green level of approximately 33%.

Claim 47 (Previously Presented): The method of claim 45, wherein the dithered gray background represents a fixed gray level of approximately 25 to 40%.

Claim 48 (Previously Presented): The method of claim 45, wherein the dithered gray background represents a fixed gray level of approximately 33%.